Patent Claims

1. An X-ray detector ~~(1)~~ for a CT device ~~(13) having~~, comprising:

a phosphor layer, adapted to ~~(3) for~~ generate~~ing~~ electromagnetic radiation as a function of an~~the~~ occurrence of X-radiation~~,~~; and ~~having~~ a photodetector layer ~~(9) for~~, adapted to ~~detecting the~~ electromagnetic radiation generated by the phosphor layer ~~(3)~~, wherein ~~characterized in that~~ the phosphor layer includes ~~(3) consists of~~ ceramic material~~;~~ and ~~in that~~ the photodetector layer ~~(9)~~ is joined to the phosphor layer~~,~~ ~~(3)~~ and includes ~~consists of~~ organic material.

2. The X-ray detector ~~(1)~~ as claimed in claim 1, wherein ~~characterized in that~~ the ceramic material is at least one of Gd_2O_2S and ~~or~~ $CdWO_4$.

3. The X-ray detector ~~(1)~~ as claimed in claim 1, ~~one of the preceding claims, characterized in that~~ wherein the organic material is a mixture of p-type polyparaphenylene-vinylene (PPV) and n-type fullerene-phenyl-C61-butoxy-methoxine (fullerene-PCBM).

4. The X-ray detector ~~(1)~~ as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, further comprising:

an intermediate layer~~,~~ ~~(7) is~~ arranged between the phosphor layer ~~(3)~~ and the photodetector layer ~~(9)~~ and ~~is~~ joined to the phosphor layer ~~(3)~~ and to the photodetector layer ~~(9)~~.

5. The X-ray detector ~~(1)~~ as claimed in claim 4, wherein ~~characterized in that~~ the intermediate layer includes ~~(7) consists of~~ a polymer.

6. The X-ray detector ~~(1)~~ as claimed in claim 5, ~~characterized in that~~ wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

7. The X-ray detector ~~(1)~~ as claimed in claim 1~~one~~, wherein a ~~of the preceding claims, characterized in that the~~ bottom electrode is provided and ~~(5) consists of~~ includes an oxide.

8. The X-ray detector ~~(1)~~ as claimed in claim 7, wherein ~~characterized in that~~ the oxide is indium-doped tin oxide (ITO).

9. The X-ray detector ~~(1)~~ as claimed in ~~one of the preceding claims~~claim 1, ~~characterized in that~~further comprising a top electrode ~~(11)~~, ~~which is~~ joined to the photodetector layer ~~(9), is provided~~.

10. The X-ray detector ~~(1)~~ as claimed in claim 9, wherein ~~characterized in that~~ the top electrode includes at least one of ~~(11) consists of~~ a metal and~~or~~ a metal alloy.

11. The X-ray detector ~~(1)~~ as claimed in claim 9, wherein ~~characterized in that~~ the top electrode ~~(11) consists of~~ includes a conductive polymer.

12. A CT device ~~(13), characterized in that it~~ comprisinges ~~an~~ the X-ray detector ~~(1)~~ as claimed in claim 1~~one of the preceding claims.~~

13. A process for producing an X-ray detector ~~(1)~~ for a CT device ~~(13) having~~ including a phosphor layer ~~(3)~~, useable to ~~for~~ generate~~ing~~ electromagnetic radiation as a function of the occurrence of X-radiation, and ~~having an organic~~ photodetector layer, useable ~~(9) for~~to detect~~ing the~~ generated electromagnetic radiation ~~generated by the phosphor layer (3)~~, ~~characterized by the process steps of~~comprising:

producing ~~a~~ the phosphor layer ~~(3)~~ from a ceramic material; and

applying ~~a~~ the photodetector layer, ~~(9)~~ made from an organic material, to the phosphor layer ~~(3) by means of~~ via at least one of ~~a~~ spinning processing, printing processing, ~~or~~ beam/jet processing and ~~or by~~ sticking ~~it~~ the photodetector layer on the phosphor layer as a film.

14. The process as claimed in claim 13, ~~characterized by the further process step of~~further comprising:

polishing ~~the~~ a surface of the phosphor layer ~~(3)~~ before applying the photodetector layer ~~(9)~~.

15. The process as claimed in ~~one of the preceding claims~~claim 13 ~~or 14~~, ~~characterized by the~~ further ~~process step of~~comprising:

applying an intermediate layer ~~(7)~~ to the phosphor layer ~~(3) by means of~~ via at least one of spinning processing, printing processing, beam/jet processing and sticking the photodetector layer on the phosphor layer as a

film~~a spinning, printing or beam/jet process or by sticking it on as a film~~, before applying the photodetector layer~~(9)~~.

16. The X-ray detector as claimed in claim 2, wherein the organic material is a mixture of p-type polyparaphenylene-vinylene (PPV) and n-type fullerene-phenyl-C61-butoxy-methoxine (fullerene-PCBM).

17. The X-ray detector as claimed in claim 2, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

18. The X-ray detector as claimed in claim 3, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

19. The X-ray detector as claimed in claim 16, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

20. The X-ray detector as claimed in claim 17, wherein the intermediate layer includes a polymer.

21. The X-ray detector as claimed in claim 20, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

22. The X-ray detector as claimed in claim 18, wherein the intermediate layer includes a polymer.

23. The X-ray detector as claimed in claim 22, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

24. The X-ray detector as claimed in claim 19, wherein the intermediate layer includes a polymer.

25. The X-ray detector as claimed in claim 24, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

26. The X-ray detector as claimed in claim 7, further comprising a top electrode, joined to the photodetector layer.

27. The process as claimed in claim 14, further comprising:

applying an intermediate layer to the phosphor layer via at least one of spinning processing, printing processing, beam/jet processing and sticking the photodetector layer on the phosphor layer as a film, before applying the photodetector layer.

28. An X-ray detector, comprising:

means for generating electromagnetic radiation as a function of an occurrence of X-radiation, including a phosphor layer; and

means for detecting electromagnetic radiation generated by the phosphor layer, including a photodetector layer, wherein the phosphor layer includes ceramic material and the photodetector layer is joined to the phosphor layer, and includes organic material.

29. The X-ray detector as claimed in claim 28, wherein the ceramic material is at least one of Gd_2O_2S and $CdWO_4$.

30. The X-ray detector as claimed in claim 28, wherein the organic material is a mixture of p-type polyparaphenylene-vinylene (PPV) and n-type fullerene-phenyl-C61-butoxy-methoxine (fullerene-PCBM).

31. The X-ray detector as claimed in claim 28, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

32. The X-ray detector as claimed in claim 31, wherein the intermediate layer includes a polymer.

33. The X-ray detector as claimed in claim 32, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

34. A CT device comprising the X-ray detector as claimed in claim 28.